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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,335	07/02/2002	Ilia Greenblat	060707-1240	8337

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EXAMINER	
MERED, HABTE	

ART UNIT	PAPER NUMBER
2616	

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/064,335	GREENBLAT, ILIA	
	Examiner	Art Unit	
	Habte Mered	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 July 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 September 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-10 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claim**s 1-4, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doucette et al (US 6, 356, 559 B1), hereinafter referred to as Doucette, in view of Douceur (US 5, 907, 685).

Doucette teaches a communication system including a collection of modules coupled in a ring architecture, which integrates synchronous, and asynchronous message transmission.

4. Doucette discloses a rings-based system **(See Figure 1)**, comprising: a plurality of ring members **(modules 10a – 10d are the ring members in Figure 1)** on a ring network that communicate using point- to-point connectivity **(See Column 3:55-67)**; a message traversing the ring from member to member; the system being adapted so that upon the message arriving at a given ring member the message is processed by that ring member if the message is applicable to that ring member, and if the message is not applicable to that ring member, the message is passed on to the next ring member **(See Column 7:39-43 and flow charts in Figures 4-6)** ; and a system clock signal for controlling timing on the ring network wherein the system clock

signal is passed one ring member to another consecutive ring member. **(Column 8:12-36)**

Doucette, however, fails to disclose the system clock signal is aligned between groups of ring members instead of among all of the ring members.

Douceur discloses a system and method for synchronizing clocks in a distributed computer system having a plurality of computer nodes arranged in a communication ring.

Douceur discloses the system clock signal is aligned between groups of ring members instead of among all of the ring members. **(Douceur shows the system clock signal is aligned between two consecutive nodes in Figure 4 and is further illustrated in Column 7:25-40. The actual process done between each node is shown in Figures 3 and 5)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Doucette's system to incorporate a system that further aligns the system clock signal between groups of ring members instead of among all of the ring members. The motivation being such a system by minimizing the need for a master time-keeper node and forcing the calculation for timing synchronization be distributed amongst all nodes prevents a single point of failure and results in a system which is highly scalable and which adapts well to the dynamic addition and deletion of individual computers from the system as stated in Douceur Column 2:13-25.

5. Regarding **claim 2**, Doucette fails to disclose a system wherein the system clock signal alignment is performed among adjacent ring members.

Douceur discloses a system wherein the system clock signal alignment is performed among adjacent ring members. **(See Figure 4 and Column 7:25-40.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Doucette's system to incorporate a system that further aligns the system clock signal among adjacent ring members. The motivation being such a step allows the ring network to determine the inter-node delay accurately.

6. Regarding **claim 3**, Doucette fails to disclose a system wherein the alignment for a ring member is performed with respect to the ring member's upstream and downstream ring member.

Douceur discloses a system wherein the alignment for a ring member is performed with respect to the ring member's upstream and downstream ring member. **(The process shown in Figure 4 for a given node is repeated first with the upstream node and then with the downstream node and Column 7:25-40.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Doucette's system to incorporate a system that further aligns the system clock signal for a given ring member by performing the alignment with respect to the ring member's upstream and downstream ring member. The motivation being such a step allows the ring network to determine the inter-node delay accurately.

7. Regarding **claim 4**, Doucette discloses a system, wherein the system clock signal runs in the same direction as the message. **(See Column 3:37-45)**

8. Regarding **claims 9 and 10**, Doucette fails to disclose a system wherein the alignment substantially removes skew among the clock signals and prevent a flip-flop at a ring member sampling data a clock cycle too early.

Douceur discloses a system wherein the alignment substantially removes skew among the clock signals and prevent a flip-flop at a ring member sampling data a clock cycle too early. **(See Column 5:27-43 and Figure 3)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Doucette's system to incorporate a system that further removes skew among the clock signals and prevent a ring member from sampling data a clock cycle too early. The motivation being to synchronize the timing reference between ring members as stated in Douceur Column 2:18-20.

9. **Claims 5 and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Doucette in view of Douceur as applied to claim 1 above, and further in view of Raatikainen et al (US 5, 886, 992), hereinafter referred to as Raatikainen.

10. Regarding **claim 5**, the combination of Doucette and Douceur fails to disclose a system wherein the system clock signal runs in the opposing direction to the message.

Raatikainen discloses a frame synchronized ring system.

Raatikainen discloses a system wherein the system clock signal runs in the opposing direction to the message. **(See Figure 1, the request message 114 travels opposite the system clock signal 108)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Doucette and Douceur to incorporate

a system wherein the system clock signal runs in the opposing direction to the message. The motivation being such an arrangement provides fairness to nodes whose turn has passed to send a request to access the ring on a need basis as stated in Raatikainen Column 13:9-19

11. Regarding **claim 8**, the combination of Doucette and Douceur fails to disclose a system wherein further comprising a backpressure signal that runs in the opposing direction to the message, and wherein the alignment is performed by inserting logic at the ring members to ensure that the return path for the backpressure signal exceeds the clock delay between adjacent members.

Raatikainen discloses a system wherein further comprising a backpressure signal **(Figure 1, signal 112 which also serves as Request signal)** that runs in the opposing direction to the message **(Figure 1, data bus 106)**, and wherein the alignment is performed by inserting logic at the ring members to ensure that the return path for the backpressure signal exceeds the clock delay between adjacent members **(See Figure 2, the latching logic circuit in a node and Column 15:57-65).**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Doucette and Douceur to incorporate a system wherein further comprising a backpressure signal that runs in the opposing direction to the message, and wherein the alignment is performed by inserting logic at the ring members to ensure that the return path for the backpressure signal exceeds the clock delay between adjacent members. The motivation being such an arrangement provides fairness to nodes whose turn has passed to send a request to access the ring

on a need basis without impacting on going data transfer as stated in Raatikainen Column 13:9-19.

12. **Claims 6 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Doucette in view of Douceur as applied to claim 1 above, and further in view of Okada (US 6, 122, 285), hereinafter referred to as Okada.

13. Regarding **claim 6**, the combination of Doucette and Douceur fails to disclose a system wherein the alignment is performed by inserting logic at the ring members that ensures that the delay between adjacent clock signals does not exceed the delay between the adjacent members.

Okada teaches data transfer in a ring system.

Okada discloses a system wherein the alignment is performed by inserting logic at the ring members that ensures that the delay between adjacent clock signals does not exceed the delay between the adjacent members. **(Okada shows how alignment is done using logic circuits in Figures 12 and 46. See also Column 22:15-30)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Doucette and Douceur to incorporate a system wherein further comprising wherein the alignment is performed by inserting logic at the ring members that ensures that the delay between adjacent clock signals does not exceed the delay between the adjacent members. The motivation to use logic circuits to introduce delay is because logic circuits are cheap to implement.

14. Regarding **claim 7**, the combination of Doucette and Douceur fails to disclose a system wherein the alignment is performed using latches that are clocked by clock signals at individual members.

Okada discloses a system wherein the alignment is performed using latches that are clocked by clock signals at individual members. **(See Figures 16, 35, and 38 and Column 10:10-18)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Doucette and Douceur to incorporate a system wherein the alignment is performed using latches that are clocked by clock signals at individual members. The motivation is that use of latching in transmission and reception allows clock skew to be corrected very accurately as stated in Okada Column 10:11-15

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Habte Mered whose telephone number is 571 272 6046. The examiner can normally be reached on Monday to Friday 9:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571 272 3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Habte Mered
10-27-2006

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